

What is claimed is:

1. A method for increasing the efficiency of a power plant using a moisture containing feedstock as a fuel, the method comprising:

gasifying an amount of said feedstock in a gasification unit to produce a high pressure fuel gas;

heating at least a portion of said high pressure fuel gas;

using at least a part of said heated fuel gas to dry said feedstock in a drying unit, thereby producing a humid gas; and

burning said humid gas in a combustion chamber to power an expansion turbine.

2. A method for increasing the efficiency of a power plant using a moisture containing feedstock as a fuel, the method comprising:

gasifying said feedstock in a gasification unit to produce a fuel gas;

heating a high pressure inert gas in said gasification unit;

using at least part of said heated high pressure inert gas to dry said feedstock in a drying unit.

13

<sup>2</sup>  
3. The method of claim <sup>1</sup>2 further comprising:

reheating at least a portion of said inert gas passing through said drying unit by passing said portion through said gasification unit.

~~2~~ <sup>3</sup>  
4. The method of claims ~~X~~ <sup>1</sup>2 or <sup>2</sup>3 wherein said feedstock comprises at least one of coal, agricultural products, and municipal wastes.

5. A system for utilizing a moisture containing feedstock as a fuel source, comprising:

a feedstock drying unit;

a feedstock gasification unit capable of producing a high pressure fuel gas;

a feed moving said feedstock from said drying unit to said gasification unit;

a heating unit;

a pathway conducting at least a portion of said fuel gas sequentially from said gasification unit through said heating unit and said drying unit.

*Concluded*  
6. A system for utilizing a moisture containing feedstock as a fuel source, comprising:

a feedstock drying unit;

a feedstock gasification unit;  
a feed moving said feedstock from said drying unit to  
said gasification unit;  
a heating unit;  
a source of a high pressure inert gas;  
a pathway conducting said inert gas sequentially  
through said heating unit, said drying unit and said  
feedstock gasification unit.

7. The system of claim 6 wherein at least a portion of  
said inert gas is recycled from said drying unit through said  
gasification unit.

b 8. The system of claims ~~5~~<sup>4</sup> or ~~7~~<sup>5</sup> wherein said feedstock  
comprises at least one of coal, agricultural products and  
municipal wastes.

9. An improved gasification power plant having a feedstock  
drying unit, a gasification unit producing a high pressure fuel  
gas from the feedstock, and a combustion turbine, the improvement  
comprising:

a heat exchanger;  
a pathway conducting a portion of said fuel gas  
sequentially from said coal gasification unit to said heat

15

exchanger, from said heat exchanger to said drying unit, and from said drying unit to said combustion turbine.

<sup>7</sup>  
10. An improved gasification power plant having a feedstock drying unit, a gasification unit producing fuel gas from the feedstock, a source of high pressure inert gas, and a combustion turbine, the improvement comprising:

a first heat exchanger;

a second heat exchanger;

a pathway conducting a portion of said inert gas sequentially from said first heat exchanger to said drying unit, from said drying unit to second heat exchanger, and from said second heat exchanger to said combustion turbine.

<sup>8</sup>  
11. The power plant of claim <sup>10</sup> further comprising another pathway conducting another portion of said inert gas sequentially from said first heat exchanger to said drying unit, from said drying unit to said gasification unit, and from said gasification unit back to said drying unit, while the remainder of said inert gas is sent to the combustion turbine.

<sup>9</sup>  
12. The power plant of claims <sup>7</sup> <sup>8</sup> <sup>10</sup> or <sup>11</sup> wherein said feedstock comprises at least one of coal, agricultural products and municipal wastes.